

## A NEW *PLEBEJUS (ICARICIA) SHASTA* (EDWARDS) FROM SOUTHERN NEVADA (LYCAENIDAE)

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**ABSTRACT.** The distinctive population of *Plebejus (Icaricia) shasta* (Edwards), known only from the Spring Range (Clark Co.) Nevada, is described as the new subspecies, *P. s. charlestonensis*. No intermediate populations are known. Its abundance varies widely from year to year. The distinctness of this and other endemic taxa further confirms the isolation of the fauna of the Spring Range.

In his recent revision of the *Plebejus (Icaricia) shasta* (Edwards) complex, Ferris (1976) failed to recognize the distinctive population occurring at the higher elevations of the Spring Range in Clark County, Nevada. The first mention of this population was by Garth (1928) who recognized it as distinct from nominate *shasta* of California; its difference from other *shasta* populations was further reiterated by Emmel and Shields (in press). The Spring Range specimen illustrated in Howe (1975) was designated *shasta shasta* form "comstocki." Ferris (1976) included Spring Range material with the wide-ranging *P. shasta minnehaha* (Scudder). Ferris (1976) saw no reason to describe local isolated colonies as new taxa. However, in light of the distinctiveness of Spring Range *shasta* and of the occurrence of at least three well defined races of other butterflies endemic to the mountains of southern Nevada, it seems appropriate to name this population of *P. shasta*.

### *Plebejus shasta charlestonensis*, new subspecies

(Fig. 1)

**Male** (based on holotype and 6 topoparatypes) **dorsal surface.** Primaries bright violet-blue (near Mauve, all capitalized colors herein after Smithe, 1975); discal cell spot black and prominent; wing border black, narrow and sharply defined with few black scales extending basad except along the veins; fringe entirely white. Secondaries of same ground color as primaries; marginal spots large and well defined occurring in cells Rs through Cu<sub>2</sub> with those in Rs and Cu<sub>2</sub> occasionally blurred and that in Cu<sub>1</sub> the largest. Distal to the marginal spots, a well defined pale gray (nearly white) line interrupted by black-scaled veins; the black scaling of the veins extending proximally to somewhat basad of the marginal spots; discal cell spot narrow and not particularly prominent. Distal to the pale marginal line, a black terminal band adjacent to a pure white fringe; fringe on the inner (anal) margin pale gray-brown somewhat paler than the gray-brown scales along the inner margin of this wing. **Ventral surface.** Primaries clear pale gray (Pale Neutral Gray) fading to brownish gray; a large elongate black spot at the distal end of discal cell and another smaller spot in the middle part of this cell in all seven specimens. Post-median spot row composed of large black spots except in

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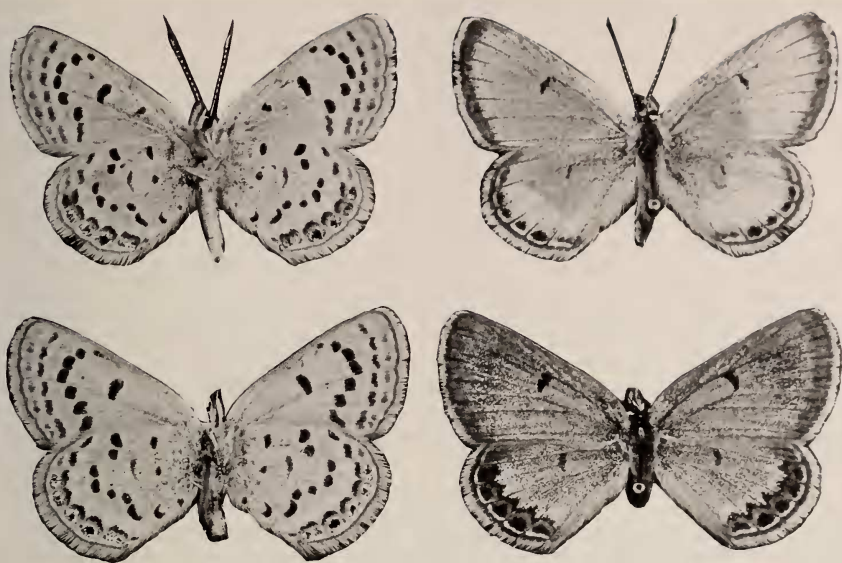


FIG. 1. *Plebejus shasta charlestonensis* n. ssp. Left: ventral surface of holotype ♂ (upper) and allotype ♀ (lower). Right: dorsal surface of holotype ♂ (upper) and allotype ♀ (lower). Photos by R. Aseltine.

Cu<sub>2</sub> where the spot is dark gray in most specimens; all spots heretofore mentioned narrowly and indistinctly outlined with pale gray. The submarginal spot row brownish-gray; the marginal row a similar but paler color. Terminal line brownish-gray bordering a white fringe. Secondaries slightly paler than primaries with all spots in the post-median row and basal area black and indistinctly outlined with pale gray. In some specimens the posterior spots (beyond M<sub>1</sub>) with a slight brownish-gray cast as the spot in the end of the discal cell. Marginal metallic Apple Green spots in cells M<sub>1</sub> to Cu<sub>2</sub> centered with black and capped with clear orange (near Chrome Orange) lunules which are in turn capped with black; basal to this a very pale gray area grading into the gray-brown ground color of the rest of the wing; a narrow, pale gray line separating the metallic spots from a brownish-gray terminal line adjacent to a white fringe. The marginal-submarginal pattern weakly represented in cell Rs of some specimens and usually represented only by black submarginal spots in this and cell Sc + R<sub>1</sub>.

**Female** (based on allotype and six topoparatypes) **dorsal surface.** Primaries dark brownish-black with an extensive violet-blue overlay of about the same color as the male; this overlay extending from the wing base to at least the end of the discal cell and in most specimens to at least 50% further towards the outer margin along the inner margin of the wing; the costal margin (except basally) and the apical area without the violet-blue overlay. The discal cell spot prominent and averaging larger than in the male. Secondaries of the same dark brownish-black ground color as the primaries with the entire basal portion posterior to M<sub>1</sub> overlaid with violet-blue, this extending distally to the marginal-submarginal band. The marginal black spots large and black, often pointed basally and largest in Cu<sub>1</sub>; these capped basally with broad orange to orange-brown (most specimens near Chrome Orange) lunules, interrupted from forming a complete band by relatively indistinct black-scaled veins; the orange lunules bordered

basally by a distinct black band; adjacent to the latter, in some specimens, an area devoid of the blackish ground color which makes the violet overlay appear as a very pale violet color; distal to the black marginal spots, a narrow, but distinct, pale gray line; the white fringe bordered inwardly by a black band. The marginal pattern indistinctly represented in cell Rs in some specimens. The inner marginal area and its fringe similar to the male. **Ventral surface.** Quite similar to the male but the post-median spots tending larger on both the primaries and secondaries. Three of the seven specimens with a mid-discal cell spot on the primaries.

**Types<sup>2</sup>.** Holotype ♂: Lee's (=Lee) Canyon, (Spring Range), Clark Co. (nty), Nev. (ada), 8,500', 21 July 1963. Allotype ♀: Lee's (=Lee) Canyon, (Spring Range), Clark Co. (nty), Nev. (ada), 8,250', 21 July 1963. This specimen lacks the right antenna and most of the left. Topoparatypes: 6♂, Lee's (=Lee) Canyon, (Spring Range), Clark Co. (nty), Nev. (ada), 8,250', 21 July 1963; 4♀, Lee's (=Lee) Canyon, (Spring Range), Clark Co. (nty), Nev. (ada), 8,250', 21 July 1963; 1♀, same data except 8,550'; 1♀, same data except 8,800'. Entire type series collected by George T., Anna T. and Edward J. Austin.

**Deposition of type material.** The holotype and allotype will be deposited in the Los Angeles County Museum, Los Angeles, California; a pair of topoparatypes will be deposited in the Nevada State Museum, Carson City, Nevada; the remaining topoparatypes will be retained by the author.

**Type locality.** NEVADA: Clark Co.; Spring Range, Lee Canyon, 8,250–8,800'. This is the open area between Lee Canyon Guard Station and the ski tow as shown on USGS Charleston Peak, Nevada, quadrangle, 15 minute series (R 56E, T 18S, S 10 and S 15) and virtually surrounded by a forest of Ponderosa and Bristlecone pines (*Pinus ponderosa* Dougl. and *P. aristata* Engelm.) and White Fir (*Abies concolor* (Gord.) Parry).

**Additional specimens examined.** (all NEVADA: Clark Co., Spring Range) Kyle Canyon Road above chain, ca. 8,500', 27 July 1965 (1♀); Kyle Canyon, 9,000', 25 July 1965 (1♂, both Austin collection); Lee Canyon (near ski area), 5 July 1976 (1♂, D. Mullins collection). **Other known specimens.** (all NEVADA: Clark Co.; Spring Range) Willow Creek, 6,000–8,000', 15 July 1928 (15♂ 19♀, Gunder collection in American Museum of Natural History, fide J. F. Emmel); Lee Canyon Ski Run, 8,600', 12 and 17 August 1963 (8 specimens, J. F. Leser collection); Cathedral Rock (Kyle Canyon) 8,500', 10 July 1972 (1 specimen, D. E. Allen collection); road between Kyle Canyon Camp and Deer Creek Camp (=Deer Creek Road), ca. 7,000', 1 July 1950 (2♀, from field notes of F. W. Preston where listed as *Plebius* (sic) *acmon*, one of these illustrated in Howe, 1975). The specimens in the Gunder collection must be part of the series of "several hundred" collected by Morand as mentioned by Garth (1928). The fate of the remaining specimens of this series is unknown to the author.

**Geographic range, phenology and abundance.** To date, *P. shasta charlestonensis* is known only from the Spring Range between 6,000 and 9,000' in the Kyle Canyon–Lee Canyon areas and in the northern part of the range near Willow Creek. The known flight period of the single brood extends from 5 July to 17 August, probably peaking in late July. It apparently varies greatly in abundance as numerous specimens were taken in 1928 and 1963, 2 specimens in 1965 and one in 1976. No other specimens are known although areas close to known collection sites of *P. shasta* are visited regularly by collectors seeking the other Spring Range endemics. In 1977, I collected extensively in Kyle Canyon and at Willow Creek throughout the summer and was at the type locality in Lee Canyon on 7 and 29 July but no *shasta* were seen.

**Etymology.** This subspecies is named after the highest peak in the Spring Range and a popular name for the main mass of the Spring Range.

**Discussion.** The new subspecies is the most distinctive of the races of *P. shasta*.

<sup>2</sup> Data on types are as indicated on specimen labels, parenthetical data correct errors or clarify label data.

Its closest relationships appear to be with the Great Basin populations allied to *P. s. minnehaha*. The dorsal ground coloration of males is as bright or brighter than *minnehaha* with more violet and less blue (other populations, including nominate *shasta*, tend towards *Campanula*). Its narrow borders are like those of *minnehaha* and contrast with the broad borders of nominate *shasta*. Beneath, the pattern is clear and bold with less tendency for the post-median spot row to fade into the ground color. This in itself distinguishes the taxon. The orange submarginal lunules are a clear, Chrome Orange and not dull (usually near Cinnamon Rufous) as in the other races. The females are even more strongly different from those of other *shasta* populations. The violet-blue overscaling is extensive, covering about 75% of the dorsal wing surfaces and of the same color as in males. The marginal pattern of the dorsal hind wing is very prominent with large marginal black spots capped broadly with orange lunules which are set off from the violet wing coloration by a broad dark band. The orange band is broad and clearly defined in all female *charlestonensis* examined; it is often narrow and/or indistinct and overscaled with black in females from other populations. The ventral surface pattern is clear and bold as in males. The post-median spot row of the ventral secondaries tends to approach closer to the marginal band especially towards the anal angle. In many respects the females of this population of *P. shasta* superficially resemble *Plebejus acmon* (Westwood and Hewitson). The painting of the Spring Range *P. shasta* in Howe (1975, plate 59, Fig. 16) is a fairly good representation of the female of this new subspecies.

The justification for naming this population aside from its definite pattern differences from other *shasta* populations lies in the isolation of the Spring Range (and the nearby Sheep Range) from other mountain masses of similar elevation by some 75 miles of low, arid desert. This isolation has resulted in the differentiation of three named taxa of other butterflies: *Limenitis weidemeyerii nevadae* (Barnes & Benjamin), *Euphydryas anicia morandi* Gunder and *Speyeria zerene carolae* (dos Passos & Grey). Endemism is known for other taxa including plants (Clokey, 1951), mammals (Hall, 1946) and, to some degree, birds (Johnson, 1965).

Ferris (1976) included all Nevada *shasta* in *minnehaha* but he did not have material from the Sierra Nevada of extreme western Nevada. I have examined over 100 Nevada specimens (outside Clark County) in the Nevada State Museum and my personal collection. Specimens from Washoe Co. (Mt. Rose, Hobart Reservoir) and Ormsby Co. (Snow Valley) are clearly within the concept of nominate *shasta*. Those from Elko (Angel Lake) and White Pine (Mt. Wheeler, Stella Lake, Bald Mt.) counties are best referred to unnamed populations allied to *minnehaha* (see Emmel and Shields, in press). Material from Lander (Mahogany Canyon), Mineral (Corey Peak), Esmeralda (Trail Canyon) and possibly Douglas (Mt. Siegel) and Pershing (Star Peak) counties appear intermediate between these unnamed segregates and nominate *shasta*. None of these populations shows any intermediacy towards *charlestonensis*.

#### ACKNOWLEDGMENTS

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THE IDENTITY OF THE PLANT REFERRED TO AS  
ANDROMEDA BY W. T. M. FORBES

The name *Andromeda* has been used ambiguously in the lepidopteran literature. A striking example is in its mention as a larval host for *Datana major* Grote and Robinson and *Datana ranaeceph* (Guérin) by Forbes (1948, *Lepidoptera of New York . . . II*: Cornell U. Agric. Expt. Sta. Mem. 274, p. 215). The ranges of both of these species lie almost entirely to the south and east of the only species of the genus *Andromeda* covered by Fernald (1950, Gray's Manual of Botany, 8th ed. Amer. Book Co., N.Y., p. 1123). Furthermore, Robinson and Fernald (1908, Gray's New Manual of Botany, 7th ed., Amer. Book Co., p. 635) list *Andromeda* as an old generic name for three species of *Lyonia*. They also include *Pieris floribunda* (Pursh) B. & H. in *Andromeda*. In an earlier work, Forbes (1923, *Lepidoptera of New York . . . I*: Cornell U. Agric. Expt. Sta. Mem. 68, p. 700) makes the following citation in the food index "*Andromeda* (*Andromeda*, *Lyonia*): *villela* 312." The moth (*Holcocera villela* Busck) is listed in the text as feeding on *Andromeda ligustrina*, a plant placed in *Lyonia* by Fernald (1950) and Robinson and Fernald (1908).

I have repeatedly found eggs and larvae of both of the above *Datana* on *Lyonia mariana* (L.) D. Don. in the New Jersey Pine Barrens. *D. major* also utilizes *Leucothoe racemosa* (L.) Gray about equally often. Older larvae of both occasionally wander to highbush blueberries (*Vaccinium* 2 or 3 spp.). No species of *Pieris* or *Andromeda* is native to that region.

Thus, lepidopterists should consider host records of *Andromeda* (or *Andromeda*) cautiously unless the species is stated. It is virtually certain that such records for *Datana* and probably *Catocala andromedae* (Guenée) (Forbes, 1954, *Lepidoptera of New York . . . III*, Cornell U. Agric. Expt. Sta. Mem. 329, p. 333) actually refer to some species of *Lyonia*.

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